

II. PERICÆCAL HERNIÆ.

Bardeleben (1849) was the first to describe the true situation of the cæcum. He said that it is sometimes almost completely covered by peritoneum, and that usually it had a short mesentery. The disposition which is most frequently encountered, according to Rieux, is that the peritoneum passes simply in front of the cæcum and holds it fast in the iliac fossa. The free cæcum is an exception. Engel's observations on 100 cadavers were as follows:

Ten times in the right iliac fossa, its head reaching to the internal border of the psoas, closely hugging the anterior abdominal wall in the inguinal region; 28 times it was situated above the psoas; 30 times it was situated above the symphysis pubis; 8 times deeply in the pelvis; 4 times in the region of the umbilicus.

About the cæcum are three fossæ: the ilio-cæcal, the ilio-appendicular, and the retro-cæcal (simple or double).

1. ILIO-CÆCAL FOSSA.—On the anterior aspect of the ilio-cæcal angle, in all cases, is a peritoneal fold which is a part of the anterior layer of the mesentery, which passes above or in front of the ilium to loose itself upon the cæcum. There is the mesenterico-cæcal fold. It is thin and transparent in the embryo and infant, and full of fatty tissue in the adult. The anterior ilio-cæcal artery takes a short course across this fold to the lower extremity of the cæcum. This triangular fold is inserted by its base into the anterior layer of the mesentery of the small intestine. Its apex is inserted upon the anterior surface of the cæcum near the root of the appendix. Its adherent border looses itself upon the anterior surface of the cæcum near the place of attachment of the ilium. Finally its free border, semilunar, with its concavity turned to the left, along which runs the artery, has its upper extremity lost upon the mesentery and the inferior extremity corresponds to the apex of the fold. Between this fold and the anterior surface of the ilium is an elongated opening, the ilio cæcal fossa.

2. ILIO-APPENDICULAR FOSSA.—Observing the ilio-cæcal junction from below two folds of peritoneum are seen, of which one, the posterior, extends between the mesentery, the cæcum and the appendix;

the other, the anterior, extends between the ilium, the cæcum and the preceding fold, on the anterior surface of which it is lost. These two folds are the true mesentery of the appendix and cæcum. Between them is the ilio-appendicular fossa.

3. *RETRO-CÆCAL FOSSA*.—This fossa is due to the adhesion between the colon, cæcum and mesentery, and the posterior abdominal wall. The peritoneum, in passing from the intestine into the iliac fossa, is thrown into a number of folds which form pockets of greater or lesser depth. Ordinarily there are but two folds which limit a single fossa. Sometimes three are encountered, limiting two fossæ.

a. Internal Retro-Cæcal Fossa. Limited by two folds

1. The mesenterico parietal fold, described by some as the inferior ligament of the cæcum, is triangular; its superior border is inserted into the posterior layer of the mesentery at the ilio-cæcal angle a little to the left of the cæcum. Its parietal border is fast to the iliac fossa near the sacro-iliac articulation. Finally the free border is directed forward, and is concave. The apex of the fold is lost above and behind upon the mesentery.

2. The parieto-cæcal fold has three borders. The border adherent to the intestine is partly inserted upon the postero-external face of the colon and extends down upon the cæcum. Its parietal border is adherent to the lumbar wall, passes over the iliac crest to be inserted for a certain extent upon the external flank of the iliac fossa. Its anterior, or free border, is semilunar, the upper horn being lost upon the intestine and the inferior in the iliac fossa. The apex of the fold is lost in the angle formed by the junction of the colon to the lumbar wall. The faces of the fold look to the right and left. The peritoneum of the iliac fossa is thrust between these two folds behind the cæcum, and forms a pouch.

b. External Retro-Cæcal Fossa. Sometimes there are two parieto-colic folds. This gives two retro-cæcal fossæ side by side.

Pathological Anatomy.—Peri-cæcal herniæ may be divided into two groups. In the first the sac is situated between the cæcum and the iliac or lumbar wall. The second is the ilio-appendicular variety.

RETRO-CÆCAL HERNIA.—Developed in one of the retro-cæcal

fossæ. The disposition and relations of the sac vary with the volume of the hernia. In the small hernia the sac is formed of a peritoneal pouch situated between the cæcum and the iliac wall. The sac is forced behind the ascending colon between the two layers of its meso. In its formation the hernia always takes the same course. The hernia always contains a knuckle of ilium of variable length.

The only example of voluminous retrocæcal hernia is the case of Engel. In this case the sac contained the whole of the small intestine, except the duodenum and extreme upper end of the jejunum and a small portion of the lower end of the ilium. The sac communicated with the peritoneal cavity by an orifice two inches in length. It occupied the right abdominal cavity. The cæcum was above and a little to the left of the umbilicus.

Ilio appendicular hernia. A very rare form.

III. INTERSIGMOID HERNIA.

Engel found, in 100 cadavers, the sigmoid flexure in the left hypochondrium in eight cases; in the middle of the abdomen, nearly to the epigastrium, in six; in the right hypochondrium, in the curvature of the colon, in two; in front of the cæcum in six; crossing transversely the lower abdominal region above the pubis in sixteen; in the normal position in the remainder of cases. In the normal condition the sigmoid flexure descends into the pelvic cavity to the innerside of the left psoas, afterward ascends a little almost to the promontory and returns downward to the rectum, describing a curve along the left wall of the pelvis. It is attached to the abdominal wall by a long mesentery.

On the posterior aspect of the sigmoid flexure are certain serous folds passing to the iliac fossa. Some of these folds are not constant. Two, however, are always present. One of these, the colico-iliac, arises from the inferior layer of the meso and the same layer of the beginning of the sigmoid flexure, to be lost on the psoas or to pass above the external iliac vessels to fix itself on the lateral wall of the pelvis. The other is seen on the same inferior layer of the sigmoid mesocolon, like the mouth of a horn, and named infundibulo-colic. This fold serves to fix the sigmoid flexure in its circular position.

The Intersigmoid Fossa.—Close to the bifurcation of the common iliac artery is the orifice of a fossa, which is limited below by the sharp falciform border of a serous fold formed by the peritoneum which passes from the pelvis. This fold has its concavity directed upward. The two horns, right and left, are lost upon the inferior layer of the mesocolon in passing over the iliac vessels and left ureter. The sigmoid vessels emerge from beneath the fold to be distributed over the meso. The orifice admits one or two fingers. The canal is conical and is 6 or 7 cm. deep. Its location corresponds with the articulation of the fifth lumbar vertebra with the sacrum. It is not between the two layers of the sigmoid meso but between the meso and the parietal peritoneum.

Pathological Anatomy.—A rare hernia; based on two cases. In one case the hernia formed a large tumor. The great omentum covered the sac, which was situated to the left, above the sigmoid flexure. The great intestine surrounded the tumor. In the second case the sigmoid flexure was displaced towards the median line. The pyriform sac had a diameter of three inches. In the first case all the small intestine, except one-third of the duodenum and the last centimetre of the ileum, were contained in the sac. In the second case about six inches of the ileum were herniated.

VI. HERNIA THROUGH THE HIATUS OF WINSLOW.

Pathological Anatomy.—The orifice of the sac is the hiatus of Winslow, the borders of which may be thickened and inflamed. Very rarely the small intestine is herniated. The great intestine is most frequently found in this hernia; also the cæcum and omentum.

In most cases the gut was strangulated either by an accessory orifice or by the abrupt bend of the intestine at its entrance to the hiatus, or by the hiatus forming a thick resisting collar.

Etiology—The causes of retroperitoneal hernia are almost unknown. It is more frequent in men than in women, and in adults than in children. According to Treitz it is always acquired, never congenital. He gives the following causes.

1. The abnormal looseness of the peritoneum in advanced age, after

emaciation, after pregnancy. after a rapid disappearance of ascitic fluid.

2. Efforts of respiration, micturition, defecation, any increase of abdominal pressure.

3. The overdistention of the intestine by gas or aliment.

4. The jarring of the body in walking, dancing, horseback-riding, etc.

Symptoms.—All retro-peritoneal herniæ may be classed in four groups:

1. The herniæ which are met by chance in the dissecting room, and which form the great majority of cases. The lack of clinical information in these cases does not permit of suppositions as to the troubles which they may have determined.

2. The herniæ which do not manifest their presence during life except by slight digestive trouble.

3. The herniæ which give rise to chronic intestinal obstruction.

4. Finally, the herniæ which manifest their presence in the appearance of some uncertain trouble, and later on approach the nature of acute intestinal obstruction, rapidly fatal, after having presented the characteristic picture of internal strangulation.

a. With slight gastric and intestinal disturbance. Habitual constipation; vague pains in the abdomen; colic; dyspepsia; all the digestive troubles which are dependent on dilatation of the stomach, gastric and intestinal catarrh. In cases in which the sac allows the intestine great mobility, and with a large orifice, the symptoms may be latent throughout the patient's life. But often, on account of some modification of the peritoneum or angulation in the intestine, the hernia becomes the seat of strangulation, may be chronic, or acute and rapidly fatal. During the latent period by careful physical examination we may often discover the trouble.

Two classes of these herniæ, especially in reference to the duodenal variety, which is much the most frequent, may be considered, the small and voluminous. The small hernia is apt to be accompanied only by the slight troubles, and to remain unknown, unless by some complication it is changed sufficiently to reveal its presence. The voluminous hernia of this class, accompanied by a train of symptoms slightly pathog-

nomonic, may permit the clinician to suspect if not to discover it. Leichtenstern described an elastic, circumscribed tumor, in the umbilical region, cylindrical, and giving the idea of a large cyst; not very mobile, and extending from the umbilical region to the left. The fact that the percussion of this tumor gave a clear sound, that auscultation revealed intestinal bruits, the existence of hæmorrhoids and rectal hæmorrhages, on account of compression of the inferior mesenteric vein, enabled him to make a diagnosis.

The knowledge of the possible existence of these herniæ in the latent state will permit, in certain cases, the bringing into account this affection in the diagnosis of abdominal tumors.

b. With symptoms of chronic strangulation, the onset is always slow and insidious. The case of Strazewski suffered six months with pains about the umbilicus, of frequent diarrhœa, alternating with obstinate constipation, nausea, vomiting, anorexia. In the case of Majoli, the constipation and slight attacks of pain preceded ten months the appearance of the tumor. In the case of Strandenmayer the onset was sudden; having previously been well, the child suddenly was seized with violent pain in the umbilical region. The functional troubles are the same as in all partial obstructions. Coming on more or less violently are colic, vomiting, difficulty in evacuating the bowels, sometimes resembling complete obstruction. The pain is seated in the umbilical or epigastric region.

In Majoli's case of hernia through the hiatus of Winslow, the tumor protruded the abdominal wall of the epigastrium. Palpation revealed a resisting body, 6 cm. long, and having a vertical diameter of 3 cm., slightly painful, and having the form of a large potato. Percussion showed an exaggerated tympanitic note all over the abdomen except in the epigastric region. The tumor was formed by the transverse colon, and contained an accumulation of fæcal material, or an invagination of the gut. In the case of Strandenmayer the maximum pain was confined to the left abdominal region. The abdominal wall was protruded at the left hypochondriac region, corresponding to an area of resistance, loosing itself behind the costal arch. This region was tympanitic. A day later the tumor was more resistant, slightly pain-

ful, and still tympanitic. It was above and to the left of the umbilicus. The pain was always most pronounced over the most prominent part of the tumor.

About the sixteenth day of the trouble, a second tumor appeared at the extreme lower part of the original mass, the appearance of which coincided with rectal tenesmus. The autopsy revealed an invagination situated in the front part of the hernial sac. A fact of no small importance is the development of a large collateral vein on the abdominal wall between the epigastric and mammary veins.

In an analogous case, the abdomen was depressed in the stomach and umbilical regions, and along the line of the colon. In the region of the umbilicus was a tumor, the size of a child's head, nearly spherical. It was firm, easily depressed, slightly movable, not displaced by the movements of respiration, not adherent to the abdominal wall, slightly fluctuating. The hæmorrhoidal veins were greatly dilated. While the functional troubles were present, in the form of attacks of vomiting or constipation, the tumor was painful, heavy, and formed a visible protuberance. Inversely, as the functional troubles subsided, there was a diminution in the size of the tumor. In the latter days the strangulation became complete, the tumor was greatly increased in size, and was the seat of violent pains.

In these three cases of chronic obstruction the terminations were fatal in thirty, forty and fifty-three days.

c. With acute intestinal strangulation.

These cases present the general symptoms of acute intestinal obstruction. In duodenal hernia the pain is located about the umbilicus or epigastrium; vomiting, intermittent and fæcal; hiccough; complete constipation; etc. Peri-cæcal hernia gives right iliac pain. Intra-sigmoid hernia gives left iliac pain. Hernia through hiatus Winslow gives epigastric pain about the ensiform cartilage.

DIAGNOSIS.—In the cases with chronic obstruction the diagnosis is not difficult. The functional disturbances, with the tumor, render diagnosis easy. The chief factors in the diagnosis of cases with acute strangulation are the localized pain and the circumscribed tumor, with the symptoms of acute obstruction. In all cases exploratory laparot-

omy is indicated for the sake of precision of diagnosis, and relieving of the trouble at the same time.

TREATMENT.—If the abdominal tumor is absent, and if the pain is diffuse; if the symptoms are those of chronic strangulation with alternating crises and remissions, and a precise diagnosis of the seat of strangulation can not be made, the exploratory incision finds its application. If the strangulation is acute, immediate median laparotomy is called for. When retroperitoneal hernia clearly manifests its presence and location, incision of the abdominal wall on its level is indicated.

The incision should be made in the epigastrium, for hernia through the hiatus of Winslow; in the umbilical or left hypochondriac region, for duodenal hernia; in the right or left iliac region, for pericæcal or intersigmoid hernia. If the tumor is concealed, if the external signs do not permit of diagnosis of the variety, let median laparotomy be done.

Two obstacles very frequently present themselves to the surgeon in operating for retro-peritoneal hernia: (1) The impossibility, even though the obstructed gut be disengaged by a simple twist, of destroying the ring, which remains a source of danger of recurrence; (2) and the impossibility of relieving the strangulation, and the necessity of abandoning the only resource of curing the disease, on account of the great vessels which render section of the ring so dangerous.

JAMES P. WARBASSE.